



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,092	12/28/2001	James S. Burns	42390P12492	2392

7590 12/22/2006
Leo V. Novakoski
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
12400 Wilshire Boulevard, Seventh Floor
Los Angeles, CA 90025-1026

EXAMINER

CHEN, TSE W

ART UNIT	PAPER NUMBER
----------	--------------

2116

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/22/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/041,092

Applicant(s)

BURNS ET AL.

Examiner

Tse Chen

Art Unit

2116

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7-21 and 23-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7,8,11-13,16-21 and 23-30 is/are rejected.
- 7) ☒ Claim(s) 9,10,14 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 5, 11 are objected to because of the following informalities:
 - As per claim 5, “monitor unit” should be “activity monitor”.
 - As per claim 11, “including the clock gating circuit” should be “the clock gating circuit”.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-5, 7-8, 11-13, 16-21, 23-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Grochowski et al., US Patent 6636976, hereinafter Grochowski.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C.

102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

3. In re claim 1, Grochowski discloses a system [fig.3] comprising:
 - An execution pipeline [120].
 - A power delivery unit [130, 310, 320] to provide power to the execution pipeline at a specified operating point [activity level], wherein the power delivery unit includes a

Art Unit: 2116

clock gating circuit [310] to control power delivery to one or more units of the execution pipeline, the clock gating circuit including a plurality of gating units [310] that each control a clock signal to an associated unit in the execution pipeline and provide a signal indicative of the activity state of the associated unit that is being monitored for power consumption [col.5, ll.1-43].

- A digital throttle [330] to estimate a power state, responsive to activity of the execution pipeline and the specified operating point [activity level], and to trigger a change in the operating point, responsive to the estimated power state reaching a first threshold [col.6, ll.1-11].

4. As to claim 3, Grochowski discloses, wherein the digital throttle comprises an activity monitor [320] to estimate an activity level responsive to a signal from the clock gating circuit, the activity monitor including a scaling unit [associated with throttle] to adjust the estimated activity level, responsive to the current operating state [col.5, ll.50-65].

5. As to claim 4, Grochowski discloses, wherein the scaling unit includes a look-up table to store scaling factors [e.g., ratios] for a plurality of operating points [rows] [col.9, l.43], and a multiplier to multiply the estimated activity level by the scaling factor [e.g., coefficients] associated with the current operating point [col.6, ll.50-60].

6. As to claim 5, Grochowski discloses, wherein the activity monitor comprises a plurality of weight units [314], each weight unit being associated with one of the units of the execution pipeline and an adder [322] to receive a first or second value from each weight unit, responsive to the signal from the clock gating circuit [col.5, ll.50-65].

Art Unit: 2116

7. As to claim 7, Grochowski discloses, wherein the activity monitor includes a look up table to store scaling factors [ratios] corresponding to a plurality of operating points, and a scaling unit to adjust the activity level according to a scaling factor [corresponding to current row] appropriate for the specified operating point [col.9, ll.43-48].
8. As to claim 8, Grochowski discloses, comprising a conversion circuit to determine a power state [mode] from the adjusted activity level [col.8, ll.48-62].
9. In re claim 11, Grochowski discloses each and every limitation of the claim as discussed above in reference to claims 1 and 3.
10. As to claim 12, Grochowski discloses each and every limitation of the claim as discussed above in reference to claim 4.
11. As to claim 13, Grochowski discloses, wherein the operating point of the processor is specified by a voltage and a frequency [col.7, ll.1-13; col.8, l.63 – col.9, l.5].
12. As to claim 16, Grochowski discloses each and every limitation of the claim as discussed above in reference to claim 5.
13. As to claim 17, Grochowski discloses, wherein the status signal comprises one or more status signals associated with the one or more pipeline units, respectively [col.5, ll.31-43].
14. As to claim 18, Grochowski discloses, wherein the adder sums a first or a second value [e.g., zero, non-zero] from each of the weighted inputs, responsive to a state of the associated status signal [col.5, ll.50-65].
15. In re claim 19, Grochowski discloses each and every limitation as discussed above in reference to claims 1 and 11. Grochowski discloses the processor; therefore, Grochowski discloses the method of operating the processor.

Art Unit: 2116

16. As to claim 20, Grochowski discloses each and every limitation of the claim as discussed above in reference to claim 19. Additionally, Grochowski discloses normalizing [running average] the scaled activity level relative to a first threshold and accumulating the normalized, scaled activity level for a series of clock intervals [col.6, ll.12-31].

17. As to claim 21, Grochowski discloses, wherein monitoring activity states comprises monitoring status signals provided by gate units associated with the pipeline units of the processor [col.5, ll.50-65].

18. As to claim 23, Grochowski discloses, wherein adjusting the operating point of the processor comprises adjusting a frequency of the clock signal [col.8, l.63 – col.9, l.5].

19. As to claim 24, Grochowski discloses, wherein adjusting the operating point further comprises adjusting a voltage of the clock signal [col.7, ll.1-13].

20. As to claim 25, Grochowski discloses, wherein estimating the activity level comprises adding a first or a second weight value to a sum, responsive to a pipeline unit being in a first or a second activity state, respectively [col.6, ll.13-20] and scaling the sum by a factor [coefficient] with the current operating point [col.6, ll.50-60].

21. As to claim 26, Grochowski discloses, wherein estimating the activity level further comprises adding a weight to the sum to represent pipeline units that operate in a single activity state [col.8, ll.39-47].

22. In re claim 27, Grochowski discloses each and every limitation of the claim as discussed above in reference to claim 1, 11 and 19. Additionally, Grochowski discloses a memory system to store instructions for execution [e.g., 140, 150].

Art Unit: 2116

23. As to claim 28, Grochowski discloses, wherein each gate unit indicates a first or second activity state for a unit of the execution pipeline, according to the unit's being active or inactive in a clock interval [col.5, ll.31-43].

24. As to claim 29, Grochowski discloses, wherein activity monitor includes an adder to add a first or a second weight to the activity level, responsive to the gate unit indicating a first or second state for its associated pipeline unit in the clock interval [col.5, ll.50-65].

25. As to claim 30, Grochowski discloses each and every limitation of the claim as discussed above in reference to claim 3.

Allowable Subject Matter

26. Claims 9-10 and 14-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

27. Applicant's arguments filed October 3, 2006 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 2116

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tse Chen whose telephone number is (571) 272-3672. The examiner can normally be reached on Monday - Friday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rehana Perveen can be reached on (571) 272-3676. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tse Chen
December 12, 2006


REHANA PERVEEN
SUPERVISORY PATENT EXAMINER
12/20/06